



## Tata Consultancy Services

### Micro Focus technology powers TCS core banking solution

#### Challenge

FNS needed to provide its customers with cost-effective infrastructures and a choice of proven technology architectures for their enterprise needs.

#### Solution

- > Micro Focus Net Express®
- > Micro Focus Server for COBOL™

#### Highlights

- > Reuse of COBOL-based system on Windows
- > Target online transaction load peak of 500 tps - 811 tps achieved
- > Target batch processing load peak 10 million per hour - 21 million achieved

"The benchmark was highly successful and showed that our world class solution, BANCS®, is highly scalable and robust in a Windows environment. Financial organizations may stand to save millions of dollars by running their critical applications on Windows rather than on mainframes or UNIX."

**Dean Mathieson,**  
 Product Development Manager,  
 Delivery Channels and Windows,  
 FNS

#### Tata Consultancy Services

Financial Network Services Pty Ltd (FNS) was acquired by Tata Consultancy Services (TCS) in 2005. A specialist core banking software and integration services company, FNS ranked highly among the world's top suppliers of banking solutions. From its beginnings producing retail banking solutions, the company enhanced its flagship solution, BANCS®, to incorporate universal banking functionality spanning multi-delivery channels, treasury, trade and payments capabilities built on the same advanced technology foundation. Since acquiring FNS in 2005, Tata Consultancy Services has continued to enhance the BANCS solution, in 2011 TCS was placed in the leader quadrant of Gartner's International Core Banking Report 2011 for BANCS.

#### Benchmark study of COBOL-based system on Windows

From 27 January to 21 February 2003 a multi-disciplinary team worked to demonstrate the scalability and performance of BANCS within a Windows server environment. Traditionally, COBOL-based critical banking software such as BANCS runs on a mainframe or in a UNIX environment, rather than a Windows environment. This was the first time that a benchmark study of this type had been attempted.

"We already had eight live banking sites operating smoothly using a Windows back-end, so we knew firsthand that BANCS running on Windows was scalable and robust," said Dean Mathieson, product development manager, Delivery Channels and Windows at FNS. "However we wanted to quantify and validate that performance using rigorous and controlled conditions where the application and architecture could be pushed to their limits."

The BANCS solution automates core banking functions such as deposit processing, loans processing, loan workflow management, contingent account processing, cash accounting, electronic file transfer (EFT) switch management, department collection and other automated banking transactions integrated across multi-delivery channels. For the benchmark, only the deposit and loan processing modules were used.

The target was to reach workloads of 500tps (transactions per second) under Online Transaction processing conditions and 10 million accounts per hour under Batch Processing conditions using a Microsoft SQL database populated with 12 million test user accounts.

A 16-processor IBM xSeries 440 was used for the FNS BANCS solution, while an 8-processor IBM xSeries 440 was used for the Microsoft® SQL Server 2000 database. Micro Focus Server for COBOL was used to deploy the COBOL-based BANCS solution within the Windows environment.

### Banking on cost reductions

For banks and other financial organizations, a reliable and robust IT infrastructure is vital as customers rely on accurate, constant access to monetary resources. If a bank's IT systems fail, even for a short time, it receives a lot of high-profile press coverage and inconveniences thousands of people. As a result, many of the core banking systems that evolved in the 70s and 80s are still operational in mature banking markets. These tested and proven systems reduce the risk of implementing new software, but at the cost of maintaining legacy and/or older infrastructures with high ongoing maintenance costs.

Core banking applications historically run on IBM mainframes with a portion moving to UNIX in the late 80s and early 90s to make use of the open architecture. Although many financial organizations moved to a Microsoft platform for their front-end staff workstations and customer-facing systems, Microsoft was traditionally overlooked for back office processing.

The less mature financial markets of Asia, Africa, Latin America, Eastern Europe and the Middle East have found the architecture and cost of ownership to be a major driver in changing their core back office systems. By using a Windows back-end for core banking applications, such as BANCS, on a scale similar to the benchmark study, financial organizations can save thousands, if not millions, of dollars in deploying their new systems.

"Mainframes and UNIX systems will be around for a great many years in the banking sector. However, the recent benchmark study shows that a mission-critical banking solution, such as BANCS, could be effectively implemented in a Windows server environment for considerably less cost than setting-up a similar system on a mainframe or UNIX environment," said Mathieson.

"I think a lot of people in the industry were surprised by the strong results we achieved and by how particularly robust the Windows environment proved to be," Mathieson commented.

FNS estimates that, depending on associated business and IT drivers, many of the world's financial organizations could gain cost benefits by migrating from the mainframe, and even UNIX servers, to a lower cost Windows model.

### Built and deployed using Micro Focus technology

The multi-process application, BANCS, was built using the Net Express COBOL development environment and component business object techniques. Written in COBOL with millions of lines of code, BANCS solution is easily portable across platforms such as mainframe, UNIX and Windows and is interoperable with Java and .NET.

"Some of our competitors have written their core processing engines in Java, and they've proven not to be as stable, fast or scalable as BANCS," explained Mathieson. "COBOL-based BANCS however, has proved very robust under high workloads and gives a speed that can't be matched by similar Java applications. The recent benchmark is a good example of just how scalable and reliable COBOL-based BANCS is on a Windows environment, with batch load peaking at 21 million accounts per hour and online transaction load peaking at 811 transactions per second."

Sitting between the COBOL code in the BANCS application and the Microsoft operating system used for the benchmark test, is Micro Focus Server for COBOL, the deployment component for Net Express.

Micro Focus Server for COBOL provides users with the flexibility to balance performance with portability. For example, if your key requirement is performance, you may use native code optimization for specific hardware chips. If your key requirement is portability, applications can be created where the object code can be built once and run on any supported platform with the confidence that the code will work exactly the same way, regardless of differences in operating systems or hardware platforms.

“Being COBOL-based is one of the keys to the BANCS success and the success of the benchmark study. Micro Focus COBOL actually does what some other languages promise – you can basically write once and run anywhere,” Mathieson said. “Micro Focus Server for COBOL handled all of the run-time facilities between BANCS and Windows Server operating system including communications, user interface, database access and file handling. As with the other components of our test, Micro Focus technology outperformed expectations under extremely high loads.”

**Extremely high transaction throughput**

“811 transactions per second is an extremely high transaction throughput. For example, if you combine the transactions of the major banks in Australia, a country of 19 million people – even in the most busy trading times, you would probably not see a load as high as 811 tps,” said Mathieson.

Loads		
	Batch Load	Online Load
Target	10 million/hr	500 tps
Achieved	21 million/hr	811 tps
% of Target	210%	162%

“In the banking industry it’s vitally important that mission-critical systems are robust and highly available. Over the last half a century COBOL has proven its reliability and stability for such core transactional and business systems. Now with tools from Micro Focus, COBOL is able to embrace, and integrate fully with modern frameworks such as .NET. This allows organizations to ‘do more with less’ and harness their solid investments in legacy systems while also moving forward into current and evolving architectures,” Mathieson concluded.

**About Micro Focus**

Micro Focus, a member of the FTSE 250, provides innovative software that allows companies to dramatically improve the business value of their enterprise applications. Micro Focus Enterprise Application Modernization, Testing and Management software enables customers’ business applications to respond rapidly to market changes and embrace modern architectures with reduced cost and risk.

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